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(54) Title: **ELECTRONIC SCORING PROCESS**

(57) Abstract

An electronic scoring process which comprises assigning a smart card to a player, and opening an electronic record for that smart card at least one master facility. The master facility is adapted to receive, store, calculate and report play related data. At the initiation of a round of play, a player presents the smart card to a site specific smart card imprinter. At that time the status of the smart card is determined, and it is imprinted with current site specific information. The smart card is again presented to and read by a mobile score keeping unit. As play progresses, data is fed into the mobile unit on a real time basis, and an electronic recording of play related data is generated by the mobile unit. At the conclusion of play the electronic recording is imprinted onto the smart card. The smart card is read by a card reader and the electronic recording is transmitted to one or more master facilities where it is added to the electronic record for that smart card at that facility. Periodically a report is compiled from the electronic record, and provided to the player.

ELECTRONIC SCORING PROCESS FLOW CHART

Player	Site Of Play	Association	Leading Site
Acquires a personal smart card for data gathering purposes	Generally supplies the requested smart card	Enrolls the player, if not previously enrolled	Opens a record for the requested smart card
Presents smart card before play starts	Imprints smart card with current site specific information	NA	NA
Presents smart card to real time recorder to initiate data gathering	Provides real time data recorder	NA	NA
Enters data into real time recorder as play progresses	NA	NA	NA
At end of play retrieves data from real time recorder and imprints on smart card	NA	NA	NA
After play is concluded, transmits data from smart card to master databases	Provides equipment to permit transmission of data to master databases	Accepts transmitted data and adds it to the player's records	Accepts transmitted data and stores for purposes of compiling periodic reports
NA	NA	Provides periodic reports to player of Association specific information for standing purposes	Provides full detailed periodic reports to player for game improvement purposes
For tournament play, when applicable, presents smart card to a tournament scoring unit before and after play	Provides tournament scoring unit and information display equipment	NA	NA
For score comparison for a round of play, when desired, presents smart card to a comparison unit and selects applicable comparison criteria	Provides score comparison unit to enable score comparison under the predetermined comparison criteria	NA	NA
For a new round of play, the smart card is presented before play starts, and the data from the previous round is transmitted to the master databases if not done previously	Imprints smart card with current site specific information, and refuses permission to play until data from last round has been transmitted to master databases	NA	NA
Additional information, such as membership, transaction, credit, medical information, and the like, can optionally also be imprinted on the smart card	May be involved in, for example, credit transactions	May be involved in membership related matters	May be involved in providing other services

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1 **ELECTRONIC SCORING PROCESS**

2

3 BACKGROUND OF THE INVENTION

4

5 This application claims priority based on Kenneth D.

6 Smith and James C. Jakubowski United States Provisional

7 Patent Application Serial No. 60/031,056, filed November

8 18, 1996, for Electronic Scoring Process.

9

10 1. Field of the invention.

11 The invention relates in general to electronic score

12 keeping, and, in particular, to electronic score keeping

13 wherein a smart card is employed to facilitate the keeping

14 of a detailed electronic record of play and other

15 comparative information.

16

17 2. Description of the prior art.

18 Scores and standings have been compiled and kept for

19 the play of a wide variety of games. Some games, such as,

20 for example, golf or bowling, require considerable

21 continuously updated information to accurately compute

22 handicaps. The burden of record keeping and calculation

23 is substantial. Current information is often not

24 available in time to contribute significantly to the

25 improvement of a players game.

1 Various expedients have been proposed for the purpose
2 of score keeping. See, for example, Lambourne United
3 States Patent No. 5,536,010, which proposes an electronic
4 golf score card. Such devices are not effective in
5 tracking and calculating information, such as handicaps,
6 from a long series of rounds of play, particularly when
7 carried out between different players at different sites.
8 There is a need for accurate, timely, comprehensive and
9 permanent information for the scoring of athletic events.

10 Those concerned with these problems recognize the need
11 for an improved score and record keeping process.

12

13 BRIEF SUMMARY OF THE INVENTION

14 A preferred embodiment of the electronic scoring
15 process according to the present invention comprises the
16 employment of a smart card which acts to receive, store,
17 transport, and present information for electronic access,
18 at least one master facility where electronic records are
19 received, stored, compiled, calculations are performed,
20 and reports are generated, and various smart card
21 imprinting and reading devices located generally at the
22 site of play. As applied, for example, to the game of
23 golf, a smart card is, for example, issued to a player and
24 an electronic record is established at one or more master
25 facilities for that smart card. The smart card contains
26 some identifying electronic indicia which sets it apart

1 from all other such smart cards. The smart card (as is
2 well known) is capable of storing information in an
3 electronic, optical or magnetic media, or the like, in
4 such a form that it can be read and written to.

5 When a player arrives at the site (golf course) where
6 the next round of golf is to be played, the smart card is
7 preferably presented to and read by an appropriate (well
8 known) card reader device. If desired, the smart card can
9 be presented at any other time while the player is at the
10 site or venue, such as, for example, after a round of play
11 has been completed. Typically, the information on the
12 card which is read includes at least the player's
13 handicap. When the card is so presented it is also
14 generally imprinted with current information concerning
15 the golf course (hole distance, and the like). Also,
16 preferably, the card is imprinted with the fact that a
17 round of golf is to be played. Preferably, the card will
18 not be accepted for the initiation of another round of
19 golf until the information concerning the details of the
20 about to be played round have been transmitted to all of
21 the applicable master facilities, and the fact of such
22 transmission has been written back to the smart card.

23 Mobile electronic scoring devices which can read from
24 and write to the smart cards, as well as record the
25 details of play, are provided by the site administrator.
26 The players carry these mobile devices with them,

1 recording the details of play as they go. Preferably,
2 before the initiation of play, each player presents that
3 player's smart card to the mobile electronic scoring
4 device to be read. The presentation can take place at any
5 time during the round of play provided the information for
6 each player is segregated so that it can be processed
7 separately. The device is thus updated with the player's
8 identity, handicap, and the specific course information
9 which is peculiar to that site that day. The site
10 information is preferably imprinted from a centrally
11 located site specific unit onto the smart card, and from
12 the smart card into the mobile electronic scoring device.
13 Such site specific information, can, if desired, be
14 transmitted by other means. As play progresses, each
15 player enters the details of that player's game into the
16 mobile electronic scoring device. At the end of play, the
17 mobile scoring device preferably downloads the electronic
18 recording which contains the information about each
19 player's game onto that player's smart card. The player
20 then takes the smart card to a reader which reads the
21 electronic recording and transmits all or part of it to
22 the master facilities where it is added to the electronic
23 records which are associated with that particular smart
24 card. Some master facilities may be concerned with only a
25 part of the electronic recording, so only the data which
26 is of concern is transmitted. Transmission to the master

1 facilities generally is accomplished using conventional
2 devices such as, for example, modems coupled to telephone
3 systems, and the like. The mobile scoring devices which
4 are provided by the venue can, for example, take the form
5 of battery powered devices mounted on golf carts. The
6 information can be stored in these mobile devices until
7 the conclusion of play or it can be written directly to
8 the smart cards as play progresses. If these devices are
9 provided with sufficient computational power, the entire
10 round can be stored, calculated and displayed as play
11 progresses, so that scores and statistics are presented in
12 real time during the course of play. The electronic
13 recording can be, if desired, transmitted in other ways to
14 the readers or master facilities, for example, by radio,
15 optical or sonic means during or after play.

16 The information contained in the electronic recording
17 for the game of golf generally includes, for example, at
18 least the number of holes played, the number of par 3's,
19 4's and 5's played, average score per hole and per type of
20 hole, number of eagles, birdies, pars, bogeys, doubles,
21 triples and other scores, number of putts, number of putts
22 per hole and type of hole, minimum and maximum score per
23 round, minimum and maximum number of putts per round,
24 average score per round, number of fairways hit in
25 regulation, number of greens hit in regulation, number of
26 penalty strokes and average per round, number of sand

1 traps hit and percentage of sand saves per round, average
2 course rating, average slope rating, minimum and maximum
3 course rating.

4 The information gathered for the game of bowling
5 generally includes, for example, total number of lines
6 bowled, average score per line, total number of strikes,
7 average number of strikes per line, total number of
8 spares, average number of spares per line, average number
9 of pins knocked down with the first ball, number of spares
10 made by number of pins remaining after first ball, spares
11 made and missed by number and type of spares left, bowling
12 average by practice line, bowling average by league bowled
13 in, and composite average for all lines bowled.

14 The one or more master facilities which receive the
15 electronic recordings of the details of play can use them
16 for different purposes. A facility may, for example,
17 periodically compile a detailed report with
18 recommendations by a pro as to how to improve. A facility
19 which is charged with administering, for example,
20 handicaps, can use the electronic recording to establish a
21 handicap for a player as against the handicaps of all of
22 the other players whose play it administers.

23 Where tournament play is involved, a tournament
24 scoring unit is generally provided at the site of play.
25 After play is completed, all of the electronic recordings
26 are read from the respective smart cards into the

1 tournament scoring unit. Sufficient computational power
2 is provided in the tournament scoring unit to accomplish
3 the necessary computations to determine the outcome of the
4 tournament. Conventional PC computers possess more than
5 enough computing power to accomplish the necessary
6 computations using conventional software.

7 Score comparisons between players can be accomplished
8 by reading the electronic recordings on the respective
9 player's smart cards into score comparison units. These
10 units can be the same or different from the tournament
11 scoring units and the other card reader-writer devices
12 which are provided at the site of play.

13 In general, the smart cards should be generally
14 available at the various sites or venues where play of a
15 particular athletic event is to be conducted. They are
16 issued by some central issuing authority either in blank
17 with only a permanently imprinted identification, or upon
18 demand with permanently imprinted player specific
19 information. Such smart cards can also be employed to
20 carry and present other information, including, for
21 example, membership, financial transaction, credit,
22 medical information, or the like, if desired.

23 The electronic recording information can be
24 transmitted directly to a collection device at the site of
25 play so that it is not necessary to carry this information

1 on the smart card from the mobile electronic scoring
2 device to the collection device, if desired.

3 The term "smart card" is intended to cover all manner
4 of read-write capable devices without regard to the
5 specific manner in which the recording or writing of
6 information is accomplished, or the media upon which the
7 record is imprinted. Preferably, the smart card is a
8 read-write storage device which is capable of receiving
9 and storing information in a readable form, but does not
10 include within it any display or printout capability, and
11 requires an external device to read it. Such a storage
12 device is very small and convenient to carry and
13 manipulate. Typically, such storage devices comprise a
14 card which is approximately the same size and shape as a
15 conventional credit card. In one convenient form the card
16 includes an electronic chip which receives and stores in
17 readable form the information which is imprinted on the
18 card. Smart cards can be presented to a reader or writer
19 for reading or imprinting in a variety of ways. For
20 example, the card can be exposed to a read-write device
21 which reads and/or imprints data optically, magnetically,
22 sonically, or the like.

23 The use of a small, convenient smart card, according
24 to the present invention, permits the keeping of very
25 extensive, timely, accurate, permanent and complete
26 records of athletic undertakings. It also makes possible

1 the detailed analysis of such information. This adds
2 significantly to the enjoyment of these undertakings, as
3 well as to improved proficiency in carrying them out.

4 Other objects, advantages, and novel features of the
5 present invention will become apparently from the
6 following detailed description of the invention when
7 considered in conjunction with the accompanying drawings.

8

9

BRIEF DESCRIPTION OF THE DRAWINGS

10 The present invention provides its benefits across a
11 broad spectrum of athletic endeavors. While the
12 description which follows hereinafter is meant to be
13 representative of a number of such applications, it is not
14 exhaustive. As those skilled in the art will recognize,
15 the basic methods and apparatus taught herein can be
16 readily adapted to many uses. It is applicant's intent
17 that this specification and the claims appended hereto be
18 accorded a breadth in keeping with the scope and spirit of
19 the invention being disclosed despite what might appear to
20 be limiting language imposed by the requirements of
21 referring to the specific examples disclosed.

22 Referring particularly to the drawings for the
23 purposes of illustration only and not limitation:

24 Fig. 1 is a flow chart of a preferred embodiment of
25 the invention.

26

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring particularly to Fig. 1, there is illustrated a preferred flow chart of the principal steps which are carried out in practicing the present invention with respect to, for example, a round of golf. The actions of each of the four participants are arranged under the column which bears that participants name. Actions which are carried out approximately concurrently by the different actors appear in the same rows. In the illustrated embodiment, the Issuing site is different from the Association site, and provides different information extracted from the same data. The Issuing site generally provides personal services to the player with an eye to improving the player's game. The Association is concerned primarily with administering play fairly between all of its members. These two sites can be, and frequently are, however, the same. In such an instance, all of the listed functions are performed by a single entity or master facility, usually from a common database. One such master facility can, for example, operate a single database which includes the current detailed information of each round played by each ranked golfer in the world. Conventional card readers tied to convention PC computers perform most of the computational, recording and writing steps. The construction and programing of mobile scoring units is well within the skill of the art. The issuance of the

1 smart cards is generally managed by a single Issuing site
2 so as to provide integrity for the system. Preferably the
3 smart cards are available at or through the various venues
4 or sites where play is carried out.

5 A preferred way of practicing the process of the
6 present invention for a player with a previously issued
7 smart card utilizes the smart card to carry information
8 from venue to venue and from location to location within
9 each venue as a particular round of play is carried out.
10 Thus, the smart card is preferably presented at the site
11 of play before play is initiated. The card is imprinted
12 with site specific information and an indicator that a
13 round of play is about to be undertaken. The card is read
14 to determine whether the electronic recording from the
15 last round of play has been downloaded from the card. If
16 the data has not been downloaded, the player is prevented
17 from playing until the information is downloaded. Since
18 the electronic recording is on the smart card, it does not
19 matter whether the last round of play occurred last week
20 at the present site, or last year at a site half way
21 around the world. Prior to the start of play, preferably,
22 the site specific information and any pertinent player
23 specific information is read from the smart card into a
24 mobile score keeping device. This mobile device goes with
25 the players throughout the round of play. As play
26 progresses, the details of play are entered into and

1 stored in the mobile device. At the end of play, or as
2 play progresses, if desired, the electronic recording of
3 the details of play is downloaded from the mobile device
4 onto the smart card. The smart card is preferably then
5 taken to a reader at the site where it is presented and
6 read. As much of the information in the electronic
7 recording as the master facility will accept is then
8 transmitted to it. The reader also records on the smart
9 card the fact that the information has been downloaded to
10 the master facility. The smart card may be updated from
11 information in the electronic record at the master
12 facility to reflect the results of the just concluded
13 round of play, or this reporting may be accomplished at
14 some other time, for example, the next time the card is
15 presented at the start of a round of play. If the
16 downloading step is omitted, it can be accomplished the
17 next time the smart card is presented for a new round of
18 play. If tournament play is involved the data on the
19 smart card may be read into a tournament reader, which can
20 be the same or different form the regular reader.
21 Likewise, if comparisons between players for the just
22 concluded round of play are desired, the respective
23 player's smart cards can be presented to a reader and the
24 desired comparisons generated at the site or at the master
25 facility. The smart card is thus utilized to carry data
26 throughout the process between the various locations where

1 it is required. Its use permits great flexibility in the
2 immediate, accurate, and complete utilization of play
3 specific data for a variety of purposes.

4 What has been described are preferred embodiments in
5 which modifications and changes may be made without
6 departing from the spirit and scope of the accompanying
7 claims. Many modifications and variations of the present
8 invention are possible in light of the above teachings.
9 It is therefore to be understood that, within the scope of
10 the appended claims, the invention may be practiced
11 otherwise than as specifically described.

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1 WHAT IS CLAIMED IS:

2 1. An electronic scoring process comprising:

3 assigning a smart card to a player, and opening
4 an electronic record for said smart card at a master
5 facility, said master facility being adapted to receive,
6 store, calculate and report play related data;

7 presenting said smart card to a site specific
8 smart card imprinter at such site, determining the status
9 of said smart card and imprinting site specific
10 information on said smart card;

11 providing an electronic recording of play related
12 data concerning said round of play;

13 imprinting said electronic recording onto said
14 smart card;

15 adding at least a part of said electronic
16 recording to said electronic record; and

17 periodically compiling a report from said
18 electronic record and providing said report to said
19 player.

20

21 2. An electronic scoring process of claim 1

22 including imprinting said smart card to reflect that said
23 electronic recording has been added to said electronic
24 record, and rejecting the presentation of said smart card

25 for another round of play if it is determined that the

26 status of the smart card is that said electronic recording

1 from a previous round of play has not been added to said
2 electronic record.

3
4 3. An electronic scoring process of claim 1
5 including establishing a second electronic record and
6 adding said electronic recording to both said electronic
7 record and said second electronic record.

8
9 4. An electronic scoring process of claim 1
10 including adding said electronic recording to said
11 electronic record after the conclusion of said round of
12 play.

13
14 5. An electronic scoring process of claim 1
15 including imprinting information from said electronic
16 record onto said smart card after the conclusion of said
17 round of play.

18
19 6. An electronic scoring process of claim 1 wherein
20 said imprinting of site specific information includes at
21 least an imprint which indicates that a round of play has
22 been initiated.

23
24 7. An electronic scoring process of claim 1
25 including periodically imprinting said smart card with

1 play related information derived from said electronic
2 record.

3 8. An electronic scoring process of claim 1
4 including providing said electronic recording of play
5 related data as said round of play is carried out,
6 imprinting said electronic recording on said smart card at
7 the conclusion of said round of play, and transmitting
8 said electronic recording from said smart card to said
9 electronic record.

10

11 9. An electronic scoring process comprising:
12 assigning a smart card to a player, and opening
13 an electronic record for said smart card in a master
14 facility, said master facility being adapted to receive,
15 store, calculate and report play related data;
16 presenting said smart card to a site specific
17 smart card imprinter before commencing a round of play at
18 such site, determining the status of said smart card and
19 imprinting site specific information on said smart card;
20 providing an electronic recording of play related
21 data concerning said round of play;
22 adding said electronic recording to said
23 electronic record; and
24 periodically imprinting said smart card with
25 information from said electronic record.

1 10. An electronic scoring process of claim 9
2 including maintaining a plurality of electronic records
3 for a plurality of players, calculating each such player's
4 standing as against the other players and reporting such
5 standings.

6
7 11. An electronic scoring process of claim 9
8 including maintaining said electronic records and
9 periodically reporting the details of each round of play
10 to said player.

11
12 12. An electronic scoring process of claim 9 wherein
13 said round of play is a round of golf.

14
15 13. An electronic scoring process of claim 9 wherein said
16 round of play is a bowling game.

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Fig. 1

ELECTRONIC SCORING PROCESS FLOW CHART

Player	Site Of Play	Association	Issuing Site
Acquires a personal smart card for data gathering purposes	Generally supplies the requested smart card	Enrolls the player, if not previously enrolled	Opens a record for the requested smart card
Presents smart card before play starts	Imprints smart card with current site specific information	NA	NA
Presents smart card to real time recorder to initiate data gathering	Provides real time data recorder	NA	NA
Enters data into real time recorder as play progresses	NA	NA	NA
At end of play retrieves data from real time recorder and imprints on smart card	NA	NA	NA
After play is concluded, transmits data from smart card to master databases	Provides equipment to permit transmission of data to master databases	Accepts transmitted Data and adds it to the player's records	Accepts transmitted data and stores for purposes of compiling periodic reports
NA	NA	Provides periodic reports to player of Association specific information for standing purposes	Provides full detailed periodic reports to player for game improvement purposes
For tournament play, when applicable, presents smart card to a tournament scoring unit before and after play	Provides tournament scoring unit and information display equipment	NA	NA
For score comparison for a round of play, when desired, presents smart card to a comparison unit and selects applicable comparison criteria	Provides score comparison unit to enable score comparison under the predetermined comparison criteria	NA	NA
For a new round of play, the smart card is presented before play starts, and the data from the previous round is transmitted to the master databases if not done previously	Imprints smart card with current site specific information, and refuses permission to play until data from last round has been transmitted to master databases	NA	NA
Additional information, such as membership, transaction, credit, medical information, and the like, can optionally also be imprinted on the smart card	May be involved in, for example, credit transactions	May be involved in membership related matters	May be involved in providing other services